

### **R marks/Arguments**

Claims 6 to 21 are pending. Claims 6, 8, 9, 11, 13 to 15, 18, 19 and 21 have been amended. Independent Claims 6 and 21 have been amended to definitely require the presence of at least one olefinic double bond. Process Claims 9, 13 and 18 have been amended to recite the absence of a catalyst. Claims 11, 13 to 15, 18 and 19 have been amended to comply with Section 112.

Entry of the claim amendments is requested. Applicants believe that the amended claims are allowable. The claim amendments are believed to eliminate the several rejections. The claim amendments should not require a new search and should only require minimal reconsideration.

If the Examiner believes that further amendment of the claims is necessary, he is requested to call the undersigned attorney at (202) 659-2000.

Claims 11, 13 to 15, 18 and 19 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Applicants traverse this rejection.

The Office Action stated: that the rejection of Claim 6 has been withdrawn due to the modification made in the amendment; and that, however, the rejection of Claims 11, 13 to 15, 18 and 19 has been maintained due to the failure to modify the amendment.

The prior Office Action stated: that, in Claim 11, the phrase "other components of a lacquer" is written; that, however, this is vague and indefinite as to what "other components" could be present in the lacquer; and that appropriate

correction is required. Applicant traverse this rejection, however Claim 11 has been amended to remove the subject phrase.

The C.A.F.C. in Hybritech Inc. v. Monoclonal Antibodies, Inc., 213 USPQ 81, (1986), stated:

“[a] patent need not teach, and preferably omits, what is well known in the art.” [Page 94]

The types and components of lacquers are well-known to those skilled in the art and in the prior art. There are numerous English-language books, articles and other literature on lacquer in U.S. scientific and engineering libraries that readily provide such information. The “other components of a lacquer” are well-known so the claim was not indefinite and there is no requirement under Section 112 to insert “a laundry list” into Claim 6 under such circumstances.

The prior Office Action stated: that, in Claims 13 and 18, the term “an substrate” is written; that, however, this is vague and indefinite as to what kind of the substrate can be used in the process; and that an appropriate correction is required. Applicants traverse this rejection, however Claims 13 and 18 have been amended to remove the subject term.

The types of substrates involved are well-known to those skilled in the art and in the prior art. U.S. Patent No. 4,713,442 (of record) states:

“Further, these prepolymers are useful in the production of coatings on such substrates as metals, ceramics, glass and earthenware, and as impregnating lacquers of laminating resins.” [Emphasis supplied] [Col. 9, lines 9 to 12]

Note that U.S. Patent No. 4,713,442 deals with polyaromatic cyanates from which the prepolymers are prepared. The term substrate applicants' claims was not vague and indefinite.

The prior Office Action stated: that, in Claims 14, 15 and 19, the phrase "other components of" is written; that, however, this is vague and indefinite as to what "other components" could be present in the varnish or the lithographic one or the solder resist; and that appropriate correction is required. Applicants traverse this statement, however Claims 14, 15 and 19 have been amended to remove the subject phrase.

The components of varnishes, lithographic varnishes and solder resists are well-known to those skilled in the art and in the prior art. The involved terms varnishes, lithographic varnishes and solder resists by their very well-known definitions make the phrase "other components of" definite.

This rejection should be withdrawn.

The rejection of Claims 6 to 8 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 18 of U.S. Patent No. 5,932,762 has been withdrawn due to the applicants' convincing argument.

Claims 6 to 13 have been rejected under 35 U.S.C. 102(b) as being clearly anticipated by Woo et al. '442 (U.S. Patent No. 4,713, 442). Applicants traverse this rejection.

The Office Action stated that the rejection of Claims 6 to 13 under 35 U.S.C. 102(b) as being anticipated clearly by Woo et al. '442 (U.S. Patent No.

4,713, 442) is maintained for the reasons of the record in paper no. 9. Applicants disagree with this rejection.

Independent Claims 6 and 21 have been amended to recite that at least one of (i) R<sup>4</sup> and R<sup>4'</sup> and (ii) R<sup>5</sup> and R<sup>5'</sup> of at least one group B are together a direct bond. This amendment clarifies that there is at least one olefinic double bond (that permits free-radical addition polymerization).

Woo et al. '442 does not anticipate any of applicants' claims. The unsaturated oligophenol cyanates of formula I of Claim 6 require that at least one tricyclic group B has an olefinic double bond. Woo et al. '442 does not disclose any specific tricyclic aliphatic groups having an olefinic double bond, let alone either one required by applicant's claims. Woo et al. '442 is not an anticipatory reference. The two bicyclic aliphatic groups X and XI of Woo et al. '442 are not anticipatory.

Column 2, lines 36 to 39, of Woo et al. '442 states that its polycyclic aliphatic radicals contain two or more cyclic rings that may contain one or more double or triple bonds. This generic disclosure is not anticipatory of any of applicants' claims.

The prior Office Action stated: that Woo et al '442 discloses a preparation of polyaromatic cyanate esters by reacting suitable polyaromatic phenols with cyanogens chloride in the presence of a tertiary amine (see col. 4 lines 23 to 40); that, furthermore, the prepolymers are cyanate group containing polytriazines of liquid; these prepolymers may be converted to high molecular weight polytriazines by polymerization (see col. 9, lines 5 to 7); that, in addition, the

prepolymers are useful in the production of coatings on such substrates as impregnating lacquers (see col. 9, lines 9 to 12); that, also, it is possible to impregnate fibrous fillers or reinforcing materials with the aromatic cyanates (see col. 10, lines 7 to 10); and that this is identical with the claims. Applicants traverse this statement. Woo et al '422 does not disclose any specific tricyclic aliphatic groups, including those required by applicants' claims.

The Office Action stated that the applicants argue the following issues:

1. Woo et al. '442 does not disclose any specific tricyclic aliphatic groups having an olefinic double bond;

...

3. applicants' claimed unsaturated oligophenol cyanates have olefinic double bonds unlike to the compounds in Woo et al. '442;

....

The Office Action stated that the applicants' argument have been noted, but these arguments are not persuasive. The claim amendments clearly exclude Woo et al. '442.

The Office Action stated: that, first, with regard to the first and third arguments, the Examiner has noted applicants' argument; that, however, on the contrary to applicants' assertion, Claims 6 and 21 are broadly directed to the unsaturated oligophenol cyanates with olefinic double bonds or no double bonds in view of reviewing the passage of the claimed language, "(i) R<sup>4</sup> and R<sup>4'</sup> and (iii) R<sup>5</sup> and R<sup>5'</sup> each, independent of one another, are either together a direct bond or are hydrogen and a bond to a group A"; and that, therefore, Woo. Et al. '442 is

applicable to the claimed rejection. Applicants traverse this statement. Please note that at least one of the (terminal) groups B has to have an olefinic double bond. Applicants believe that amended independent Claims 6 and 21 definitively exclude the chemical entities of Woo. et al. '442.

Woo et al. '442 does not anticipate any of applicants' claims.

This rejection should be withdrawn.

Claims 14 to 20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Woo et al. '442 (U.S. Patent No. 4,713,442). Applicants traverse this statement.

The Office Action stated that the rejection of Claims 14 to 21 under 35 U.S.C. 103(a) as being unpatentable over Woo et al. '442 (U.S. Patent No. 4,713,442) is maintained for the reasons of the record in paper no. 9. Applicants disagree with this rejection.

Woo et al. '442 only discloses a preparation of polytriazines (and prepolymers) using a catalyst. There is no disclosure of Woo et al. '442 that there is any exception to the requirement to use a catalyst, even for any starting polyaromatic cyanates having polycyclic aliphatic radicals containing one or more double or triple bonds.

Applicants' claimed unsaturated oligophenol cyanates have olefinic double bonds and they do not have to use any catalyst to achieve partial curing or crosslinking. Woo et al. '442 does not teach or suggest the problem disclosed by applicants or the solution of such problem disclosed by applicants. Woo et al. '442 teaches the requirement of using a catalyst with its polyaromatic cyanates

having polycyclic aliphatic radicals containing one or more double bond or triple bonds. Accordingly, Woo et al. does not make applicants' claimed invention obvious.

The Office Action stated that applicants argue the following issues:

1. Woo et al. '442 does not disclose any specific tricyclic aliphatic groups having an olefinic double bond;
2. Woo et al. '442 does not show any exceptions to the requirement to use a catalyst as in the presence of the invention;
3. applicants' claimed unsaturated oligophenol cyanates have olefinic double bonds unlike the present invention.
4. Woo et al. '442 requires the catalyst in the preparation of the prepolymers or trizines or curing of the prepolymers unlike the present invention;

The Office Action stated that applicants' argument have been noted, but these arguments are not persuasive. The claim amendments clearly exclude Woo et al. '442 and Woo et al. '442 does not teach or suggest applicants' claimed invention.

The Office Action stated: that first, with regard to the first and third arguments, the Examiner has noted applicants' argument; that, however, on the contrary to applicants' assertion, Claims 6 and 21 are broadly directed to the unsaturated oligophenol cyantes with olefinic double bonds or no double bonds in view of reviewing the passage of the claimed language, "(i) R<sup>4</sup> and R<sup>4'</sup> and (ii) R<sup>5</sup> and R<sup>5'</sup> each, independent of one another, are either together a direct bond or

are hydrogen and a bond to a group A"; and that, therefore, the Woo et al. '442 is applicable to the claimed rejection. Applicants traverse this statement. Applicants believe that amended Claims 6 and 21 definitively exclude the chemical entities of Woo et al. '442.

The unsaturated oligophenol cyanates of formula I of independent Claims 6 and 21 require that at least one tricyclic group B has an olefinic bond.

Applicants' specification states:

"The molecule of these compounds has at least one double bond ( $R^4-R^4$  and/or  $R^5-R^5$  according to formula I) which permits free-radical addition polymerization." [Emphasis Supplied] [Page 1, lines 23 to 25]

Woo et al. '442 does not disclose any specific tricyclic aliphatic groups having an olefinic double bond, let alone one required by applicants' claims. This lack of olefinic double bond in the claimed entity of Woo et al. '442 points to its inability for free radical addition polymerization. There is no suggestion in Woo et al. '442 to incorporate any olefinic double bonds into its starting oligophenols or its oligophenol cyanate products. Woo et al. '442 does not teach or suggest applicants' claimed invention to one ordinarily skilled in the art.

The Office Action stated that, second, regarding the second argument, the Examiner has noted applicants' argument; that, however, the Woo et al. '442 teaches the preparation of one oligophenol cyanate by reacting one oligophenol with cyanogens chloride in the presence of a tertiary amine; that this reads on Claim 8; and that, therefore, the Woo et al. '442 is relevant to the claimed invention. Applicants traverse, in part, this statement. Applicants agree that



Woo et al. '442, at column 2, lines 36 and 37, discloses generically the reaction, without recitation of the presence of a catalyst, of one its "suitable polyaromtic phenols with cyanogen chloride in the presence of a teritary amine."

However, Woo et al. '442 does generically state that its preparation reaction for triazines is conducted in the presence of a catalyst. Woo et al. '442 states:

"In the preparation of the polytriazines, aromatic polycyanates are contacted in the prèsence of a catalyst...." [Column 9, lines 13 and 14]. The absence in such preparation reaction is found on page 2, lines 3 to 13, and page 3, lines 26, to page 4, line 7.

Woo et al. '442 does not disclose "...the preparation of one oligophenol cyanate by reacting one oligophenol...." Instead, Woo et al. only discloses certain polyaromatic phenols that do not have any olefinic double bonds and certain polyaromtaic cyanates that do not have any olefinic double bonds. Woo et al. '442 does not read on Claim 8 and is not relevant to the claimed invention.

The Office Action stated: that, third, concerning the fourth argument, the Examiner has noted applicants' argument; that, however, applicants did not claim that the preparation of the prepolymers or trizines or curing of the prepolymers was conducted in the absence of any catalysts; and that, therefore, Woo et al. '442 is relevant to the claimed invention. Applicants traverse this statement. Woo et al. 442 does not disclose or suggest any unsaturated oligophenol cyanates having a double bond, so Woo et al. '442 is not relevant to the claimed

invention. Woo et al. '442 requires the use of a catalyst in the preparation of its triazines.

Applicants' earlier statement did not state that Woo et al. '442 required a catalyst in the preparation of its aromatic polycyanates. Woo et al. preferably uses a catalyst in the preparation of its aromatic polycyanates and uses a catalyst in both of its working examples preparing its aromatic polycyanates. Regardless, Woo et al. '442 does not teach or suggest applicants' claimed invention.

The Office Action stated: that Woo et al. '442 discloses a preparation of polyaromatic cyanate esters by reacting suitable polyaromatic phenols with cyanogens chloride in the presence of a tertiary amine (see col. 4, lines 23 to 40); that, furthermore, the prepolymers are cyanate group containing polytriazines of liquid; these prepolymers may be converted to high molecular weight polytriazines by polymerization (see col. 9, lines 5 to 7); and that, in addition, the prepolymers are useful in the production of coatings on such substrates as impregnating lacquers (see col. 9, lines 9 to 12). Applicants traverse this statement as being an incomplete and incorrect generic description of the specific disclosure of Woo et al. '442. The starting polyaromatic phenols and polyaromatic cyanates of Woo et al. '442 do not have any olefinic double bonds. Woo et al. '442 can only polymerize its polyaromatic cyanates by cyclotrimerization (in the presence of a catalyst) of the cyanate groups, or by reaction of functional groups of other compounds. Unlike applicants' invention, Woo et al. '442's polyaromatic cyanates cannot polymerize by free-radical

addition polymerization (for example, using irradiation). Woo et al. '442 discloses the requirements of the use of catalysts in preparation for its prepolymers and polytriazines.

The Office Action stated that, however, the instant invention differs from the reference in that the preparation of the radiation-curable varnish and the preparation of the radiation-curable solder resist for a circuit board are not specified. Applicants traverse this statement. Applicants disclose that no catalyst is required to prepare their prepolymers or triazines, unlike the disclosure of Woo et al. '442.

The Office Action stated: that, even so, Woo et al. '442 does teach broadly that the prepolymers are useful in the production of coatings including varnish and solder resists, on such substrates as impregnating lacquers or laminating resins (see col. 9, lines 9 to 12); and that, furthermore, the end products combined with reinforcing materials may be used in electrical engineering, in molding construction (see col. 10, lines 34 to 37). Applicants traverse this statement. Woo et al. '442 only discloses the curing of its prepolymers using a catalyst. This is not required by applicants' invention.

The Office Action stated: that, therefore, it would have been obvious to the skilled artisan in the art to have motivation to prepare the radiation-curable varnish and the radiation-curable solder resist for the circuit board; and that this is because the reference does indicate that the polymerized polyaromatic cyanate esters can be employed to various applications including varnish, and solder resists for the circuit board. Applicants traverse this statement. Woo et al.

'442 directs away from applicants' claimed invention. Note that the standard is one ordinarily skilled in the art. The Examiner has not established required motivation.

The initial burden of presenting a prima facie case of obviousness rests on the Examiner. In *re Oetiker*, 24 USPQ2d 1443, 1444, (CAFC 1992). In determining whether an invention is obvious, the Examiner must consider: (1) the scope and content of the prior art; (2) the differences between the prior art and the claimed invention; (3) the level of ordinary skill in the art; and (4) any objective considerations that may be present. *Graham v. John Deere Co.*, 148 USPA 459, 466 to 467, (Sp.Ct. 966). "Where an obviousness determination is based upon a combination of prior art references, there must be some teaching, suggestion or incentive supporting the combination." In *re Geiger*, 2 USPQ2d 1276, 1278, (CAFC 1987).

In the present case, the Examiner has merely identified where in the prior art reference the individual components of the claimed invention are supposedly taught and then incorrectly relied on his own explanation as to why it would have been obvious to have used such individual components to solve the claimed invention. Nowhere does *Woo et al. '442* to use entities having olefinic double bonds.

The Examiner does not make reference to any teaching in the prior art which support the Examiner's conclusion of obviousness. Rather, the Examiner has merely stated that "it would have been obvious to the skilled artisan in the art to have the motivation." This approach does not provide or suggest motivation.

Reliance on "common knowledge and/or common sense does not fulfill the requirement to provide reasons to support in findings of obviousness." In re Thrift, 63 USPQ2d 2002, 2006, (CAFC 2002) [quoting In re Lee, 6 USPQ2d 1430, 1435, (CAFC 2002)].

Reconsideration, reexamination and allowance of the claims are requested.

Respectfully submitted,

Dec. 23, 2003

Date

Virgil H. Marsh

Virgil H. Marsh  
Reg. No. 23,083

Fisher, Christen & Sabol  
1725 K St., NW, Suite 1108  
Washington, DC 20006  
Tel.: 202-659-2000  
Fax: 202-659-2015